

CONSTRUCTION IMPLEMENTATION PLAN

COMMUNITY BERM PROJECT

Shaktoolik, Alaska

Bristol Project No. 32170001

May 2018

Prepared for:

Native Village of Shaktoolik
P.O. Box 100
Shaktoolik, Alaska 99771

Prepared by:

Bristol



ENGINEERING
SERVICES CORPORATION

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ACRONYMS AND ABBREVIATIONS

°	degrees
‘	minutes
“	seconds
Bristol	Bristol Engineering Services Corporation
DCCED	Department of Commerce, Community, and Economic Development
CIP	Construction Implementation Plan
CM	Construction Manager
FEMA	Federal Emergency Management Agency
EA	Environmental Assessment
FONSI	Finding of No Significant Impact
NEPA	National Environmental Policy Act
Owner	Native Village of Shaktoolik
SNC	Shaktoolik Native Corporation

1.0 INTRODUCTION

1.1 OBJECTIVES

This *Construction Implementation Plan (CIP)* was prepared in support of the Shaktoolik Community Berm Project in Shaktoolik, Alaska (Figure 1). Bristol Engineering Services Corporation (Bristol) has contracted with the Native Village of Shaktoolik (Owner), in cooperation with the Denali Commission, to prepare design documents and permits to facilitate improvements to an existing storm surge berm within the Community (Figure 2).

This design effort stems from a local project to protect the Community from the damages caused by high waters and flood events. Throughout the years, the Community has taken it upon themselves to construct a berm buffer between the Community and the Norton Sound. This project will mitigate existing damage and erosion of the berm from past storm events as well as build up and reinforce the berm to withstand future storms. A taller berm will help prevent flooding, erosion, washouts, and structural damage to essential Community infrastructure including homes, the school, water treatment plant, landfill, and fuel farm.

The primary objective of the CIP is to outline management decisions for the implementation of the construction phase of the berm project.

1.2 LOCATION AND CLIMATE

Shaktoolik is a coastal Community located on the eastern shore of Norton Sound, 125 miles east of Nome and 33 miles north of Unalakleet (Figure 1). Shaktoolik is 64 degrees (°) 21 minutes (') and 14 seconds (") north latitude and 161° 11' 39" west longitude, in Section 23, Township 13 South, Range 13 West, of the Kateel Meridian. Shaktoolik encompasses 1.1 square miles of land. Shaktoolik falls within the transitional climate

zone, characterized by tundra interspersed with boreal forests, and weather patterns of long, cold winters and shorter, warm summers.

2.0 PROJECT DEVELOPMENT TO DATE

Project development to date includes plans, specifications, engineers estimate, site control, National Environmental Policy Act (NEPA) documentation, and select permitting efforts.

2.1 PLANS, SPECIFICATIONS, AND ENGINEERS ESTIMATE

This project has developed construction ready plans, specifications, and an engineer's estimate. All plans, specifications, and the engineers estimate was developed under the direct supervision of a professional engineer registered in the State of Alaska.

The plans consisted of a total of 30 sheets, an index of sheet is provided in Table 1. The project specifications are included as sheet specification on Sheet A2 of the plans. A comprehensive engineers estimate was developed for the project, based on historical bid prices in the Norton Sound Region and the Community's recent Federal Emergency Management Agency (FEMA) project repairing roads and berms in the Community, see Table 2 for a detailed construction estimate. The final plans, specifications and engineers estimate can be found in the final project delivery binder.

Table 1 – Construction Plans Index of Sheets

INDEX OF SHEETS	
SHEET NO.	TITLE
A1	TITLE SHEET
A2	SHEET SPECIFICATIONS
B1–B6	SURVEY CONTROL SHEETS
E1	TYPICAL SECTIONS & DETAILS
E2	UTILITY ADJUSTMENT DETAILS
E3	FENCE PLAN & DETAILS
L1	KEY MAP
M1–M5	BERM PLAN & PROFILE SHEETS
P1–P13	CROSS SECTIONS

Table 2 – Engineers Estimate

Description	Pay Unit	Unit Price	Unit Quantity	Total Bid Price
MOBILIZATION & DEMOBILIZATION	LUMP SUM	\$ 200,000.00	1	\$200,000.00
CONSTRUCTION SURVEYING	LF	\$ 11.00	7,400	\$81,400.00
GRANULAR FILL	CUBIC YARD	\$ 35.00	54,340	\$1,901,900.00
SEEDING	ACRE	\$ 10,000.00	5	\$50,000.00
UTILITY RELOCATION, GUY WIRE	LUMP SUM	\$ 10,000.00	1	\$10,000.00
UTILITY ADJUSTMENT	EACH	\$ 1,000.00	23	\$23,000.00
EROSION & POLLUTION CONTROL ADMINISTRATION	LUMP SUM	\$ 10,000.00	1	\$10,000.00
TEMPORARY EROSION & POLLUTION CONTROL	LUMP SUM	\$ 50,000.00	1	\$50,000.00
		BASIC BID SUBTOTAL		\$2,326,300.00
Note: Estimate assumes force account type construction using local equipment.		CONTINGENCY @ 20%		\$465,260.00
		CONSTRUCTION ADMIN @ 15%		\$348,945.00
		TOTAL ESTIMATE		\$3,140,505.00

2.2 SITE CONTROL

As part of this project site control was established for the existing berm and subsequent construction effort in the form of blanket easements issued on Shaktoolik Native Corporation (SNC) lands in the Community. These easement documents allow the Community to solely construct, repair, and maintain a sea wall berm across Tracts F, R, S, and U of Recorded Plat 2012-5, United States Survey 11615, Cape Nome Recording District, Section 14, 15, and 23, Township 13S, Range 13W.

These easement documents were executed by the SNC and recorded at the Alaska Department of Natural Resources Recorders Office, Nome Recording District. The easements documents can be located by the following reference numbers.

- 2018-000611-0
- 2018-000612-0
- 2018-000613-0
- 2018-000614-0

The recorded easements can be found in the final project delivery binder.

2.3 NEPA DOCUMENTATION AND PERMITTING EFFORTS

A NEPA and permitting effort was completed as part of this project. This effort consisted of project scoping, public meetings, trip reports with photo logs, wetlands delineations, agency consultations, permit applications, archeological survey, and a Phase I Environmental Site Assessment.

The NEPA effort consisted of project scoping, public meeting (please see Attachment A), agency consultations, a wetlands delineation, archeological survey, and an Environmental Assessment (EA) for the proposed action. The EA result was a recommendation of a Finding of No Significant Impact (FONSI), although this has not been approved by the lead agency, as the construction funding has not been identified at this time.

Permit applications were filled out for the water withdrawal during construction including the Alaska Department of Fish and Game Fish Habitat Permit and Alaska Department of Natural Resources Water Withdrawal Permit. These applications should be obtained prior to construction, if water is desired for project activities.

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3.0 CONSTRUCTION IMPLEMENTATION

3.1 PRE-CONSTRUCTION

Prior to beginning construction activities the following activities should occur:

- Identify a funding source;
- Finalize the NEPA and permitting process under the direction of the lead federal agency funding the construction (as outlined in Section 2.0);
- Hire or identify a dedicated construction manager;
- Develop a comprehensive project budget, schedule, and work plan;
- Coordinate with all project stakeholders and the Community regarding materials, land access, construction phasing, work limits, work times, and local hire.

The engineers have estimated the total project cost at approximately \$3.1M. This is a linear project that could be constructed in phases, if funding is an issue.

3.2 DURING CONSTRUCTION

During construction the construction manager (CM) will have direct control of the day to day operations project. The manager should have a support staff to include an administrative personnel for time keeping and accounting functions and a site superintendent that manages the worksite and the field personnel. The CM will be responsible for developing daily reports that outline the projects progress. This reporting should be summarized monthly in reports to the Council(s) in the Community.

Based on observations of the communities force account construction capabilities over the 2017 and 2018 summer construction seasons we would estimate this project to take two full summers to complete, assuming no major changes to the available equipment and work force in the Community. This construction timeline could be accelerated with the additional equipment and personnel, particularly through the purchase of rock trucks capable of running on the sandy beaches.

3.3 POST-CONSTRUCTION

Upon completion of construction activities a comprehensive project summary report should be developed summarizing all construction activities. This report should include all the daily reporting, all financial reporting, materials summaries, labor summaries, final construction timelines, and letters of acceptance from funding agencies and Community stakeholders, as applicable.

It is recommended that the Community document this project photographically from the onset through the final construction. This documentation can help if there is ever a need to seek repair funding for the berm and to provide a basis of the ‘story’ that the Community can use to share with other communities in the region regarding their experience.

4.0 REFERENCES

Alaska Department of Commerce, Community, and Economic Development. (2017). *City of Shaktoolik*. Commerce.alaska.gov. Retrieved from <https://www.commerce.alaska.gov/dcra/DCRAExternal/Community/Details/714db5e4-899f-423c-a78d-e2396ee6bfe8>

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Bristol. (May 2018). *Environmental Assessment*.

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FIGURES

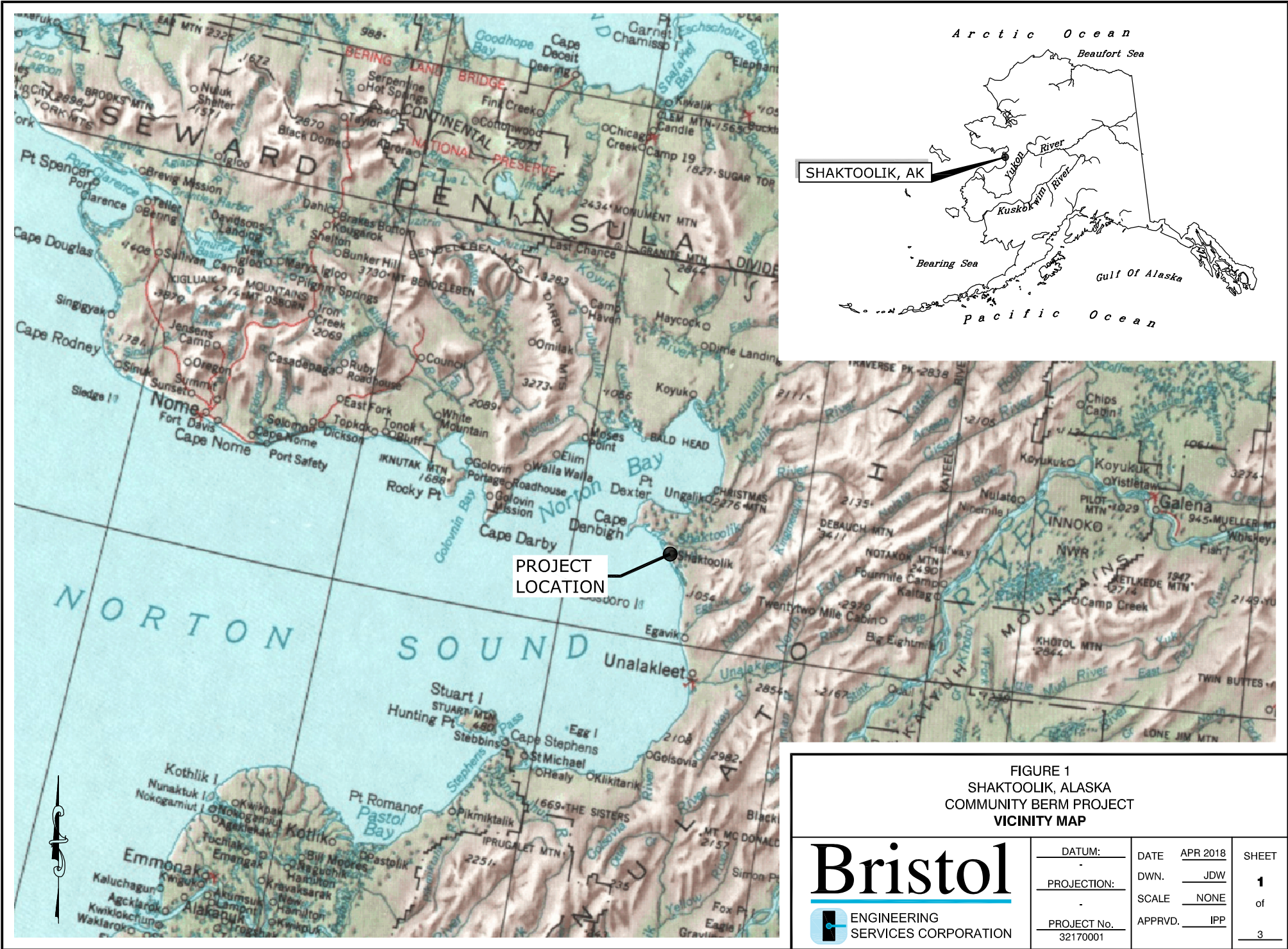


FIGURE 1
SHAKTOOLIK, ALASKA
COMMUNITY BERM PROJECT
VICINITY MAP

Bristol

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DATUM:	DATE	APR 2018	SHEET
PROJECTION:	DWN.	JDW	1
PROJECT No.	SCALE	NONE	of
32170001	APPRVD.	IPP	3



NOTES:

PHOTO SOURCE: DCCED COMMUNITY PROFILE
 MAPPING IMAGERY, 2004

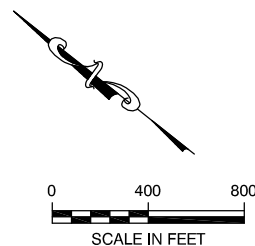


FIGURE 2
 SHAKTOOLIK, ALASKA
 COMMUNITY BERM PROJECT
 PROJECT LOCATION & SITE PLAN



DATUM:	DATE	APR 2018	SHEET
PROJECTION:	DWN.	JDW	2
PROJECT No.	SCALE	SHOWN	of
32170001	APPRVD.	IPP	3

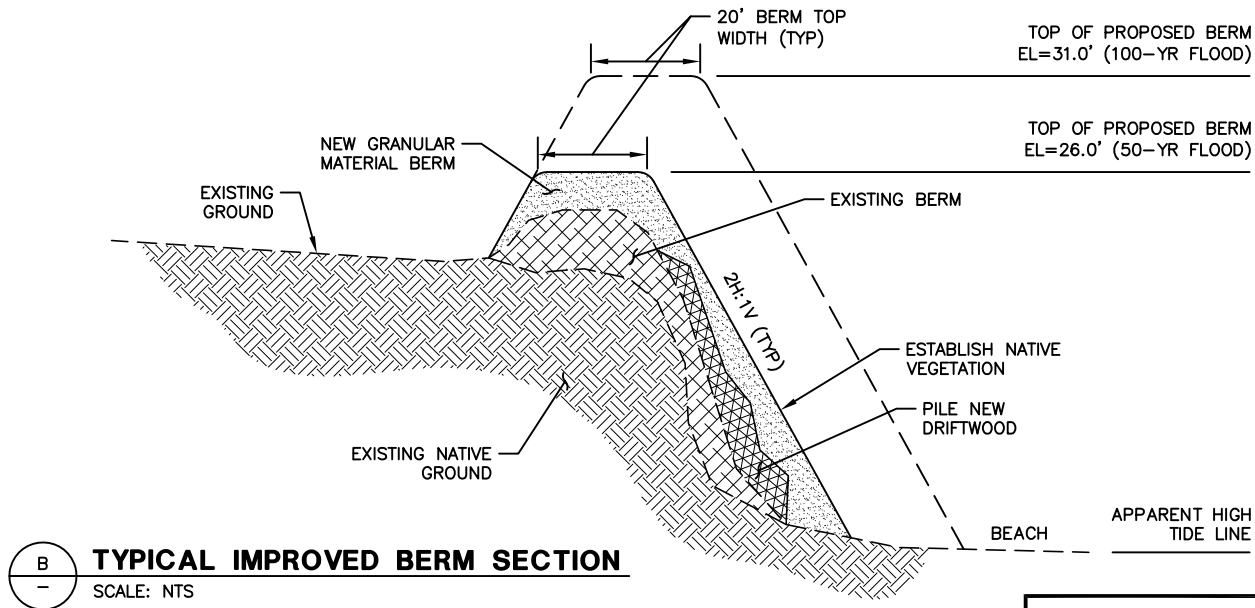
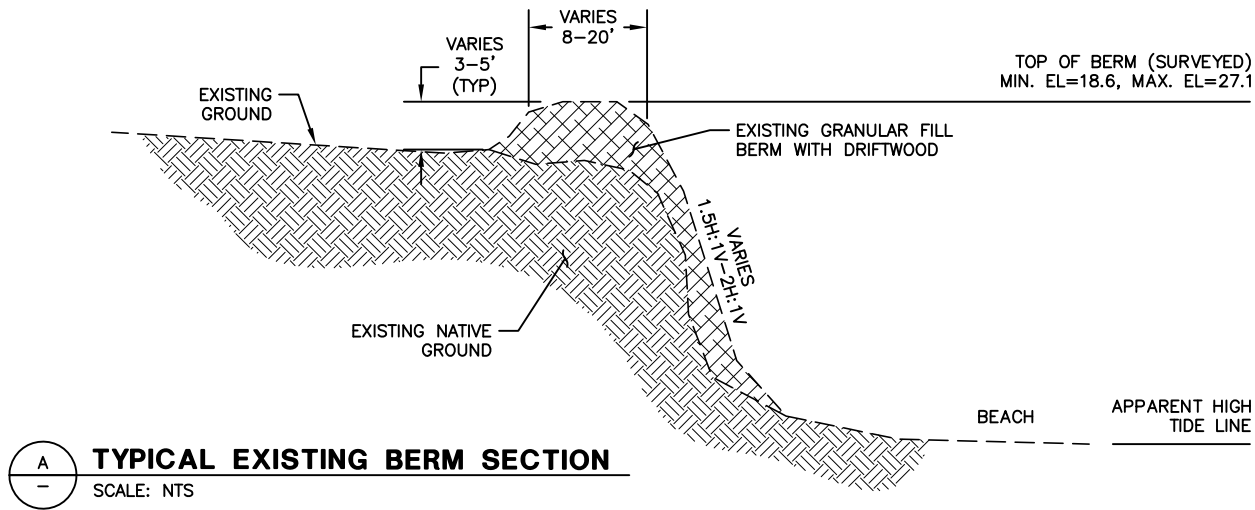


FIGURE 3
 SHAKTOOLIK, ALASKA
 COMMUNITY BERM PROJECT
 TYPICAL BERM SECTIONS

APPENDIX A

Meeting Minutes

MEETING MINUTES

Project: **Shaktoolik Berm Project**

Bristol Project No: 32170001

Reference: Public Meeting #1.

Date of Meeting, January 11, 2018 1900 - 2000 hours

Location of Meeting: School MPR, Shaktoolik, AK

Participants:

(See Attached Sign-in sheet)

1. Summary

Isaac Pearson and Jackie Wander traveled to SKK to conduct a public meeting for the berm project and meet with stakeholder entities regarding the project.

This public meeting was conducted to support the Shaktoolik Berm Project. The public was notified via a flier that was distributed to the community on December 11, 2017, see attached. A sign-in sheet was maintained at the meeting, see attached. Handouts were provided to all attendants, see attached. Photos were taken during the meeting, see attached. A presentation was developed and facilitated by Bristol, see attached. The following is public comments received during the meeting and responses by Bristol.

2. Public Comments:

1. The berm causes flooding problems in the spring. What is going to be done to change this?
 - a) After discussions it was determined that the flooding occurs only during spring break-up. No action will be taken as part of the design.
2. Water from the river is a bigger threat than the ocean. How come the berm is not on the other side of the community.
 - a) Bristol response: It was not part of the scope of this project.
3. How come the airport is not protected by the berm?
 - a) Bristol response: It was not part of the scope of this project.
4. What about the graves that are washing out of the bank under the berm?
 - a) After discussions it was determined that this was occurring on the berm at the old site. Different location than this project.

- b) Public was also informed that Section 106 activities are occurring as part of this project.
- 5. Berm vegetation comments.
 - a) Mix silt into the sand to help the grass grow.
 - i. Bristol response: Will be taken into consideration although the recommended beach wild rye does not require this action.
 - b) Bristol will coordinate with the Tri-Org for the final planting options.
- 6. Access ramps comments.
 - a) How many beach access points will there be?
 - i. Less ramps are better to keep down maintenance cost.
 - ii. After discussions on this topic it was determined that three access points would be appropriate.
 - iii. Access point locations will be verified by the Tri-Org.
 - b) Will the ramps be open cuts or 'ramps' over full height berm?
 - i. Open cuts cost the city money.
 - ii. If the ramps are full height it will be difficult to get boats to the beach for launch.
 - iii. Bristol will send a figure with recommendations to the Tri-Org for review and comments / approval.
- 7. Will drug testing be required during construction?
 - a) Bristol comments: That is to be determined by the contractor.

3. Action Items:

- a) Bristol – Coordinate with Tri-Org for planting options.
- b) Bristol – Coordinate with Tri-Org for ramp locations and types.

3. Distribution of Meeting Notes:

- a) Shaktoolik IRA
- b) Denali Commission

4. Attachments:

- a) Meeting flier, 1 pg.
- b) Sign-in Sheet, 1 pg.
- c) Handout, 2 pg.
- d) Photos, 2 pg.
- e) Presentation, 14 pg.

[End Meeting Minutes]



SHAKTOOLIK COMMUNITY BERM PROJECT

COMMUNITY MEETING

Come learn about the plan for building a berm between the beach and the community in Shaktolik. The plan involves constructing approximately 1.4-miles of berm from the community to the landfill using beach sand and driftwood. The berm will protect people and essential infrastructure from storm-surge flooding and wave runup for a 50-year design storm event.

The engineer will be available for any questions or feedback from the public.

Refreshments and door prizes will be provided for those that attend. Invite your friends and family so more of the community is involved.

Thursday,
January 11, 2018
7 pm

School Gym

Learn about the
project from the
engineer

Refreshments
Provided

Door Prizes

For more information:

Isaac Pearson
(907) 743-9313
[ipearson@bristol-](mailto:ipearson@bristol-companies.com)
[companies.com](http://bristol-companies.com)

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Shaktoolik Community Berm Project
Public Meeting #1 - January 11, 2018

Sign In Sheet

	Name	Email
1	Ellen E. Hunt	ehunt_68@hotmail.com
2	Sophia Katahtag	ssavetilik@hotmail.com
3	Genevieve Rock	GrockSKKira@outlook.com
4	CHRIS ALLARD	CALLARD@DENALI.GOV
5	Agnes Takak	atakak@SKK.bssd.org
6	Edgar Jackson	SKKFA SKK
7	Edgar Sauterlin	SKK IRA
8	Ellen Glendon	resident
9	Isabella Jackson	SKKcity@gsi.net
10	Arney Sook.ayd	Local
11	Lewis Nakarek	Local
12	Gail Egan	gail-lurlene-14@hotmail.com
13	Frederick Jackson	
14	Hannah Takak	
15	Esther Fuller	inupakjupik@yahoo.com
16	Rita Aubrey	
17	Terence & (retired) + Hans Billwale	
18		aragali14@hotmail.com
19	Simon & Behebble	bekoaloksimon@gmail.com
20	Raymond Hunt	raymond-hunt2010@hotmail.com
21	Calvin Paniptchik	
22	Lynn Takak Ti	
23	Chantelle Pennera	Chantelle33@hotmail.com
24	Alex Sampson	Alex Sampson
25	Abigail Takak	Abigail Takak

Public Meeting #1 – Informational Packet

January 11, 2018

Dear Participant;

Thank you for attending the public meeting for the Shaktoolik Community Berm Project. Your participation is extremely valuable to the project because your insight on the local environment and economy can aid in the design and permitting phases of the project. We appreciate any feedback you may have on this meeting or the project in general.

The project involves constructing a taller berm on the ocean side of the community. Approximately 1.4-miles long, berm construction will begin at the southern end of the airport property and extend 100-feet past the landfill. The berm will be made of sand mixed with driftwood for stabilization, and vegetated side slopes will provide erosion control. The berm height is designed to withstand a 100-year storm event to help prevent damage to essential community infrastructure caused by flooding and wave run-up. The project is currently at the draft design level.

The project is being funded by the Denali Commission. Because this project is federally funded, National Environmental Policy Act (NEPA) documentation is required including an Environmental Assessment. Additionally, a Fish Habitat Permit and a Temporary Water Use Permit will be required for water withdrawal from the Tagoomenik River. Water will be used for compaction and dust suppression during construction.

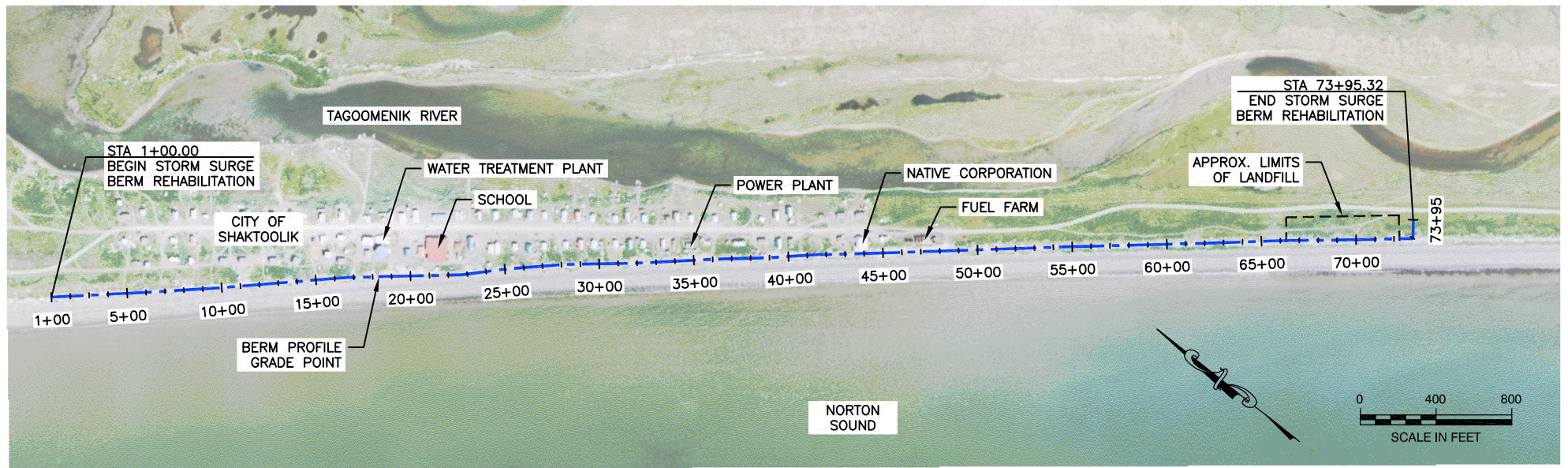
Public comment is key to a successful project. If you have suggestions or concerns regarding the project, please bring them up at the meeting or feel free to contact me directly. My email is ipearson@bristol-companies.com.

Sincerely,



Isaac Pearson, P.E.
Senior Civil Engineer

Bristol ALLIANCE OF COMPANIES™	Isaac Pearson, PE Senior Civil Engineer
	Bristol Engineering Services Corporation 111 W. 16th Avenue, Third Floor Anchorage, AK 99501-5169 phone (907) 563-0013 direct (907) 743-9313 fax (907) 563-6713 mobile (907) 351-1545 ipearson@bristol-companies.com

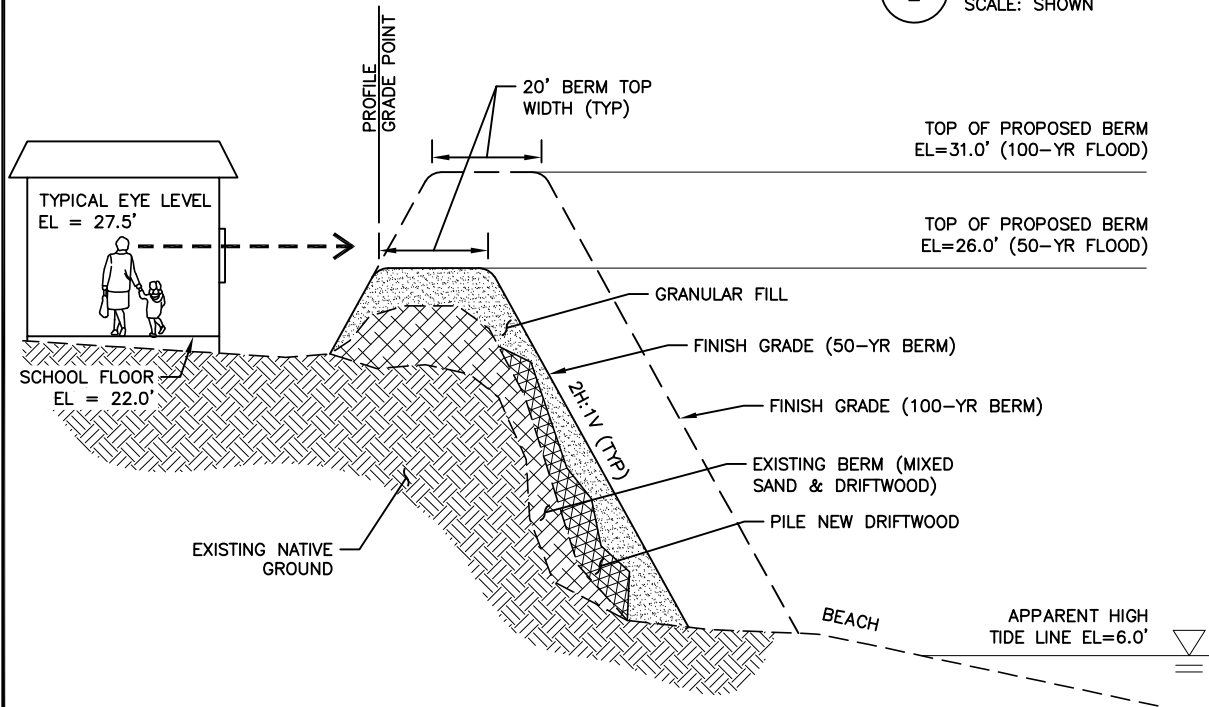


1 PROJECT LOCATION

SCALE: SHOWN

NOTES:

PHOTO SOURCE: DCCED COMMUNITY PROFILE
 MAPPING IMAGERY, 2004



A TYPICAL BERM SECTION

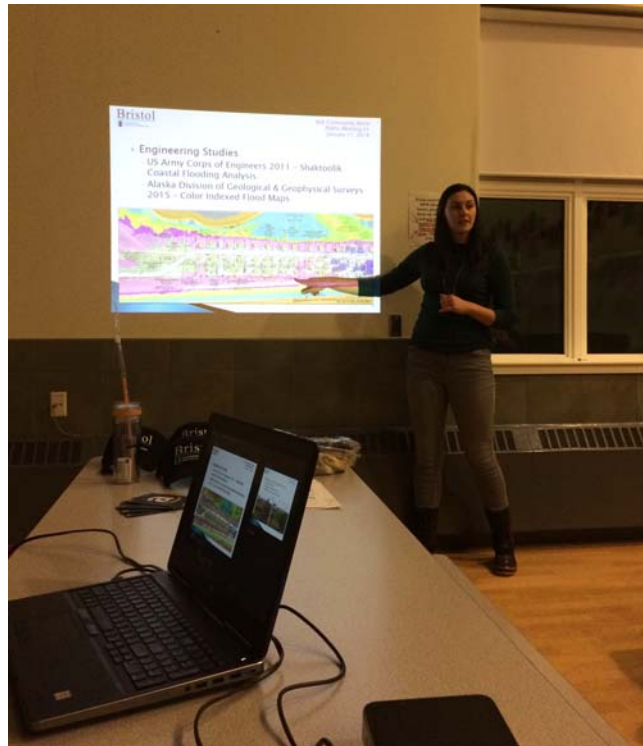
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FIGURE 1
 SHAKTOOLIK, ALASKA
 COMMUNITY BERM PROJECT
 PROJECT LOCATION & TYPICAL SECTION

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DATUM:	DATE JAN 2018	SHEET
PROJECTION:	DWN. JDW	1
PROJECT No. 32170001	SCALE SHOWN	of
	APPRVD. IPP	1

Shaktoolik Public Meeting January 2018



Shaktoolik Public Meeting
January 2018





SKK Community Berm
Public Meeting #1
January 11, 2018

Hello!

We are here to discuss:

Shaktoolik Community Berm Project

We are:

Bristol Engineering Services Corporation

Isaac Pearson, P.E.

Jackie Wander

1



- Presentation Overview
 - Project overview
 - Need for project
 - Berm design
 - Beach access ramp options
 - Vegetation establishment options
 - Community impacts
 - Project costs
 - Environmental process
 - Right-of-way
 - Next steps
 - Questions



3

- Project Overview
 - 1.4 miles of berm between beach and community from edge of airport to 100-feet past landfill





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SKK Community Berm
Public Meeting #1
January 11, 2018

► **Project Partners**

- Native Village of Shaktoolik
- City of Shaktoolik
- Shaktoolik Native Corporation
- Denali Commission
 - Funding Agency
- Alaska Division of Geological and Geophysical Surveys (DGGS)
 - Studying erosion in Alaska's coastal communities

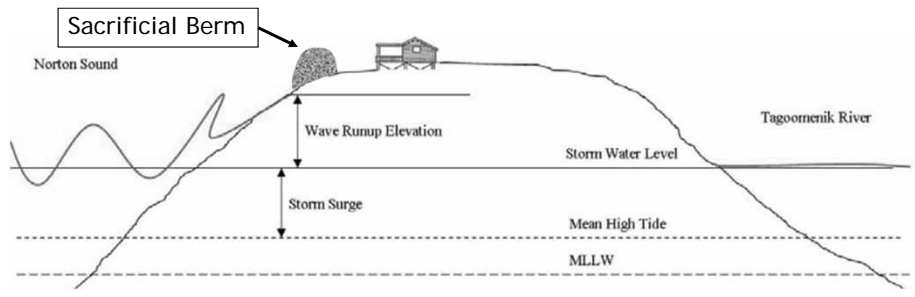
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Public Meeting #1
January 11, 2018

► **Need for Project**

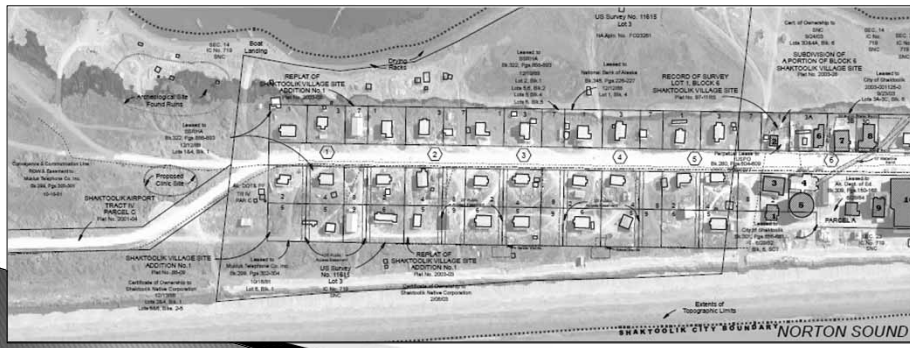
- Protect people and essential infrastructure from storm surge flooding, wave run-up, and debris.



6

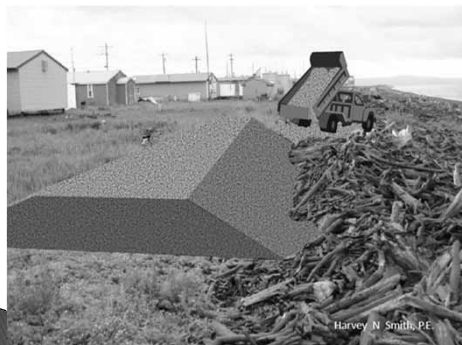
► Engineering Studies

- US Army Corps of Engineers 2011 – Shaktoolik Coastal Flooding Analysis
- Alaska Division of Geological & Geophysical Surveys 2015 – Color Indexed Flood Maps



► Mitigation Strategies (Soft Erosion)

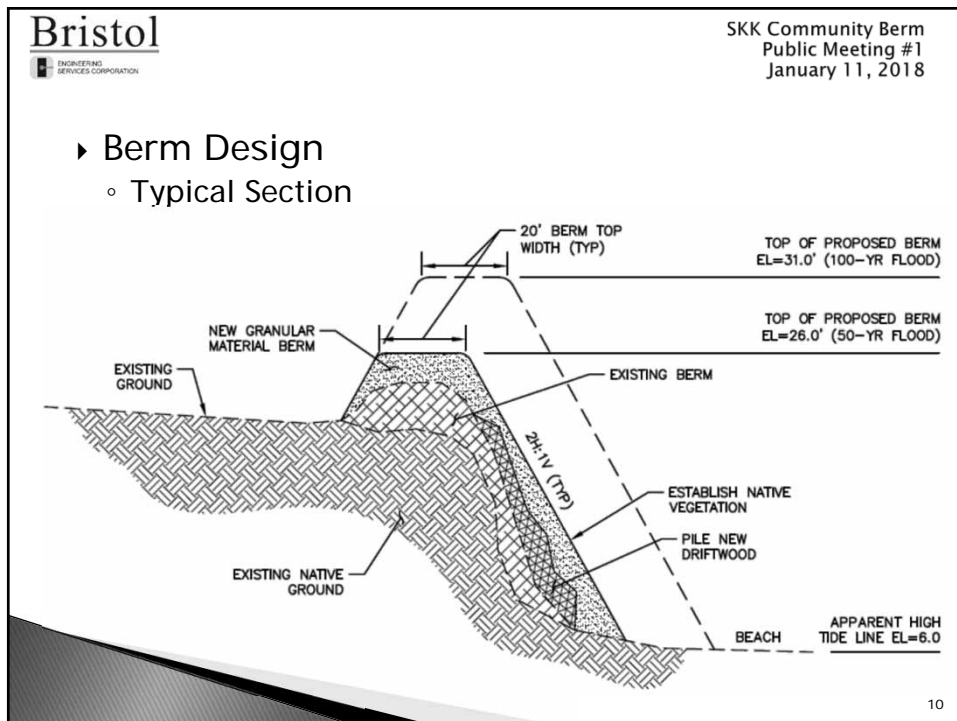
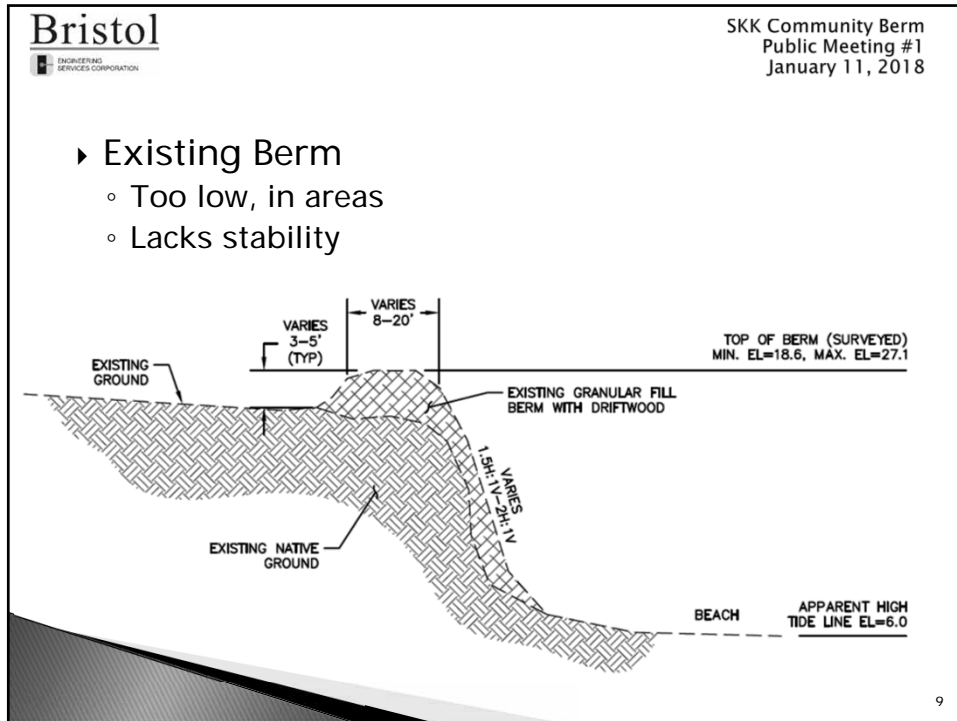
- Granular fill berm
- Driftwood to stabilize berm
- Vegetation to for erosion control



Harvey N. Smith, P.E.



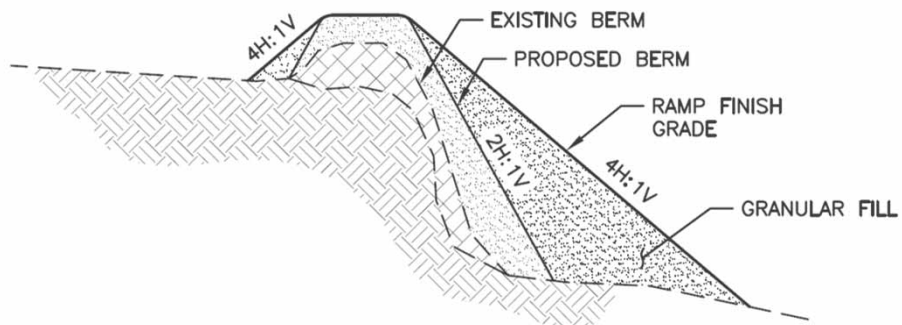
Harvey N. Smith, P.E.



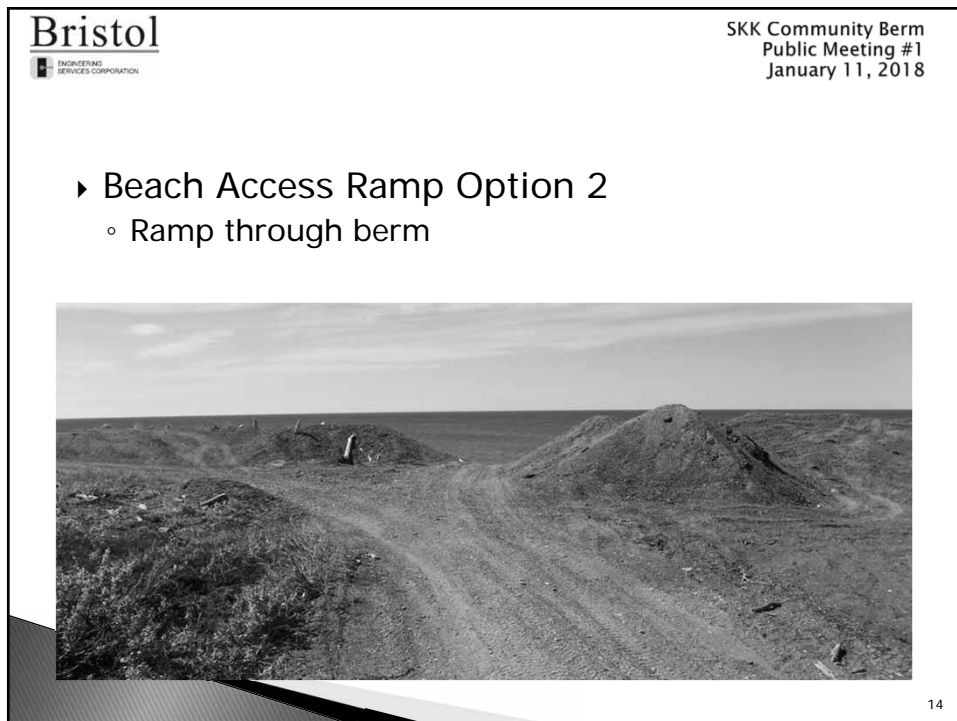
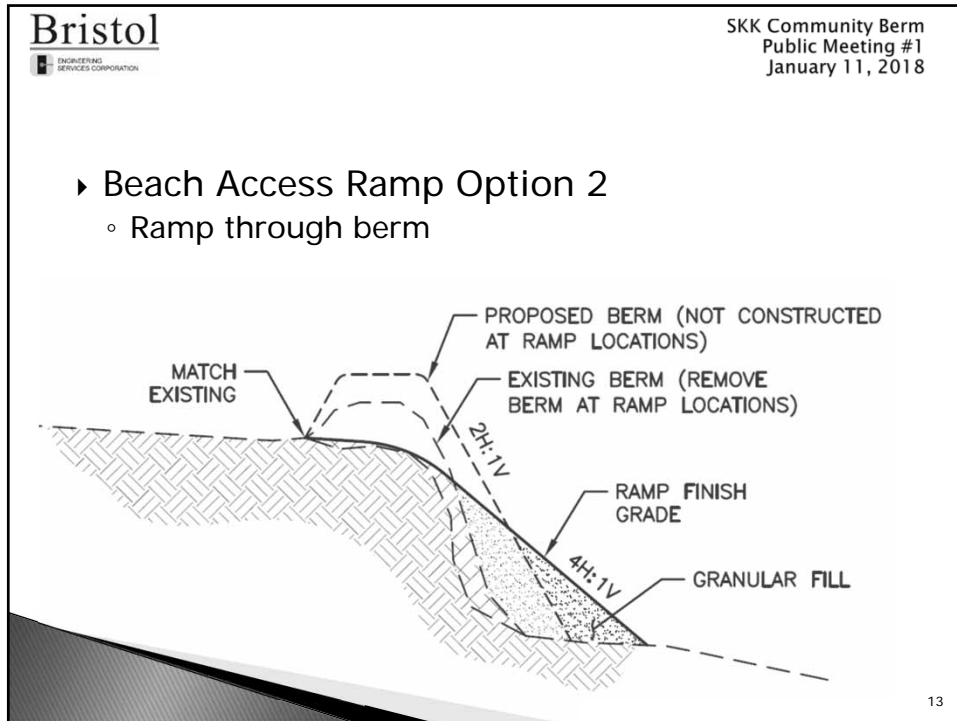
- Beach Access Ramp Options
 - Option 1: Ramp over berm
 - Option 2: Ramp through berm

11

- Beach Access Ramp Option 1
 - Ramp over berm



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- Beach Access Ramp Option 2
 - Ramp through berm



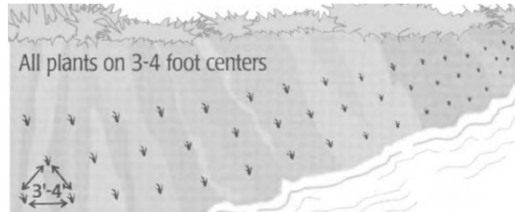
15

- Vegetation Establishment Options
 - Option 1: Beach Wildrye sprigs
 - Higher production
 - More manual labor
 - Sprigs are commercially available
 - Option 2: Transplant local vegetation
 - Potential low production
 - Recommend also planting Beach Wildrye sprigs
 - Option 3: Beach Wildrye seed
 - Lower production
 - Low cost and labor
 - Commercial availability is limited



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► Beach Wildrye Sprigs



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- ### ► Safety Considerations
- Vehicle access
 - Exposed logs
 - Tall embankment
 - Dust during construction
 - Fish hanging



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► Conflicts

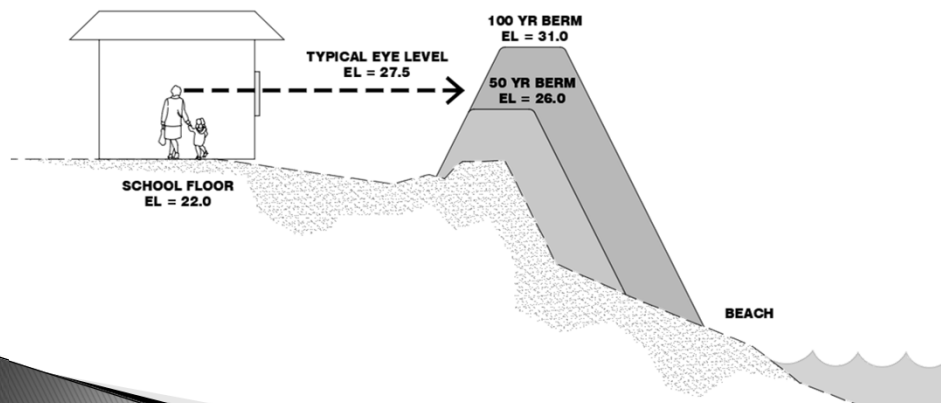
- Existing Structures
 - Abandoned machinery
 - Fish hanging tents
 - Small sheds
- Existing Utilities
 - Underground power/telephone
 - Leach fields/above grade pipes



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► Visual Impacts

- Berm will block view of beach/ocean



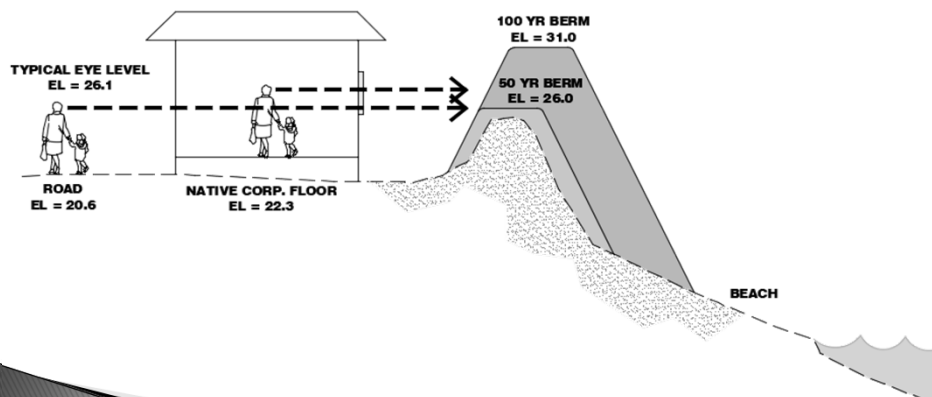
20

- Visual Impacts
 - Berm will block view of beach/ocean



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- Visual Impacts
 - Berm will block view of beach/ocean



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► Project Cost Estimate

Item	Estimate
Mobilization & Demobilization	\$200,000
Construction Surveying	\$80,300
Granular Fill	\$1,837,500
Seeding	\$50,000
Utility Relocation, Underground Electric	\$20,000
Utility Adjustment / Relocation	\$30,000
Erosion & Pollution Control Administration	\$10,000
Temporary Erosion & Pollution Control	\$50,000
Base Bid Subtotal	\$2,277,800
Contingency (20%)	\$1,278,060
Construction Administration (15%)	\$958,545
Total Estimate	\$3,075,030

100-yr \$8.4 million

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► Environmental Process

- Documentation
 - Environmental Assessment
 - Phase I Environmental Site Assessment
 - Archaeological Assessment
- Permits
 - Compliance with Section 106 of the National Historic Preservation Act
 - Fish Habitat Permit
 - Temporary Water Use Permit



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- ▶ Right-of-Way
 - Coordinate easement with Shaktoolik Native Corporation

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Public Meeting #1
January 11, 2018

- ▶ Next Steps
 - Public comment period
 - January 2018
 - Final Draft Design Report and Plans
 - February 2018
 - Final Design and Permitting Package
 - July 2018
 - Construction
 - TBD



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Questions or Comments?

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Thank You!

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